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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
YAM, STEPHEN K	

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 01/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/975,585	ALEXANDROVICH ET AL.	
	Examiner	Art Unit	
	Stephen Yam	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *1003*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

This action is in response to Amendments and remarks filed on October 27, 2003. Claims 1-11 are currently pending.

Information Disclosure Statement

1. The information disclosure statement filed October 27, 2003 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

2. The copy of the references provided by Applicant are incomplete, as they do not corresponding to the pages as listed in the Information Disclosure Statement and/or some of the pages are missing.

Claim Objections

3. Claims 6 and 8 are objected to because of the following informalities:

In Claim 6, line 13, "a control electrode" lacks proper antecedent basis, as the term is already defined in parent claim 5.

In Claim 8 (as dependent from Claim 5), "each group of elements" lacks proper antecedent basis, as a "group" has not been defined.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Imaide et al. US Patent No. 4,355,335.

Regarding Claim 1, Imaide et al. teach (see Fig. 1A) a radiation detector comprising a group of elements (see Fig. 1A), with the group of elements including a photodiode (3) and a load (12), with the load connected to a first electrode (bottom contact of (3)) of the photodiode (electrically connected through a common ground plane) and connected to a common bus (17), with the radiation detector including a transistor (6) and an interrogation pulse generator (2), with a second electrode (top contact of (3)) of the photodiode coupled to a first electrode (left contact of (6)) of the transistor, with a control electrode (top contact of (6)) of the transistor coupled to an output of the interrogation pulse generator, and with a third transistor electrode (right contact of (6)) coupled to the common bus.

Regarding Claim 2, Imaide et al. teach (see Fig. 1A) N groups of elements, each group (a row of elements in Fig. 1A) of elements including a photodiode and a transistor, with the photodiode connected to the transistor, with the photodiode and transistor connected in parallel with the load (photodiode/transistor combination connected to the load through both common bus (17) and ground plane), and with the interrogation pulse generator having N outputs, each

output of the N outputs coupled to the control electrode of the transistor from a respective group of elements, where N is an integer greater than one.

Regarding Claim 9, Imaide et al. teach (see Fig. 1A) a radiation detector comprising a radiation-sensitive element (3) and a load (12), with the radiation-sensitive element connected to a supply voltage bus (ground) and the load connected to a common bus (17), with said radiation detector including a transistor (6) and an interrogation pulse generator (2), with the radiation-sensitive element connected to a first electrode (left contact of (6)) of the transistor and an output of the interrogation pulse generator connected to a control electrode (top contact of (6)) of the transistor, with a third transistor electrode (right contact of (6)) coupled to the load.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imaide et al. in view of Henry et al. US Patent No. 3,535,526.

Imaide et al. teach the detector in Claim 2, according to the appropriate paragraph above. Imaide et al. also teach the radiation detector having a total number (# of rows) of groups of elements equal to a number of N outputs of the interrogation pulse generator (see Fig. 1A). Imaide et al. do not teach the detector having L loads, with N_i group of elements placed in

parallel with each i-th load, where L is an integer > 1, N_i is a positive integer, and i is an index of the positive integer. Henry et al. teach (see Fig. 2) a radiation detector comprising a phototransistor array with N (# of columns) groups (a column of elements) of elements such that the detector has L (= # of rows) loads (20_j) (see Col. 1, lines 46-52), with N_i (= # of columns) groups of elements being placed in parallel with each i-th load, and the total number of groups of elements contained in said detector equals the number of N outputs of the interrogation pulse generator (generating X_1 to X_n- see Col. 2, lines 29-31), where L is an integer is greater than one, N_i is a positive integer (see Fig. 2), and i is an index of the positive integer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use multiple loads with specified groups of elements being placed in parallel with each load, as taught by Henry et al. in the detector of Imaide et al., to provide multiple simultaneous readouts for each row or column in order to more quickly output a full two-dimensional detection image.

8. Claims 4-6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imaide et al. (in view of Henry et al. for Claim 4 dependent on Claim 3) in view of Herbst et al. US Patent No. 4,338,515.

Regarding Claim 4, Imaide et al. (in view of Henry et al. when dependent on Claim 3) teach the detector in Claims 1-3, according to the appropriate paragraph above. Regarding Claims 5 and 6, Imaide et al. teach (see Fig. 1A) a radiation detector comprising a group of elements, the group of elements including a radiation-sensitive element (3) and a load (12), with said radiation-sensitive element connected to a supply voltage bus (ground), and the load connected to a common bus (17), with said radiation detector including a transistor (6), and an

interrogation pulse generator (2), and an output of the interrogation pulse generator coupled to a control electrode (top contact of (6)) of the transistor, with a third electrode (right contact of (6)) of the transistor connected to the common bus. Regarding Claim 6, Imaide et al. teach (see Fig. 1A) N groups (a column) of elements, with each group of elements of the N groups of elements comprising a radiation-sensitive element and connected to a transistor with the radiation sensitive element and the transistor connected between the supply voltage and the common bus (see Fig. 1A), and with the interrogation pulse generator having N outputs, with each of the N outputs connected to a control electrode of the respective transistor in the respective group of elements, where N is an integer greater than one. Imaide et al. do not teach each group of elements including a capacitor connected in parallel with each photodiode in each group of elements, respectively, or a capacitor with the sensitive element being connected to a first electrode of the transistor at the other side and to the first plate of the capacitor, the second plate of which is connected to the load. Herbst et al. teach (see Fig. 1) a detector with an array (see Fig. 6) of elements (SE), the elements comprising a radiation-sensitive element (FD), transistor (T1), load element (L), and interrogation pulse generator (supplying $\phi 2$), also including a capacitor (C_{SE}) connected in parallel with each radiation-sensitive element, wherein the sensitive element is connected to a supply voltage bus (ground) and to the first electrode (left contact of (T1)) of the transistor and to the first plate (bottom) of the capacitor, the second plate of which is connected to the load (see Fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the capacitor setup of Herbst et al. in the detector of Imaide et al. (in view of Henry et al. for Claim 3), to stabilize the frequency characteristics of the optical signal so it is more accurately outputted to a readout.

Regarding Claim 10, Imaide et al. teach the detector in Claim 9, according to the appropriate paragraph above. Imaide et al. do not teach a capacitor connected between the first electrode of the transistor and the common bus. Herbst et al. teach (see Fig. 1) a detector with an array (see Fig. 6) of elements (SE), the elements comprising a radiation-sensitive element (FD), transistor (T1), load element (L), and interrogation pulse generator (supplying $\phi 2$), also including a capacitor (C_{SE}) connected between a first transistor electrode (left side of (T1) and a common bus (E). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the capacitor setup of Herbst et al. in the detector of Imaide et al. (in view of Henry et al. for Claim 3), to stabilize the frequency characteristics of the optical signal so it is more accurately outputted to a readout.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imaide et al. in view of Herbst et al. as applied to Claim 6, further in view of Henry et al.

Imaide et al. in view of Herbst et al. teach the detector in Claim 6, according to the appropriate paragraph above. Imaide et al. also teach a total number of groups of elements of said radiation detector equal to the number of N outputs of the interrogation pulse generator (see Fig. 1A). Imaide et al. do not teach the detector having L loads, with a signal contact of each i-th load connected to N_i group of elements, where L is an integer greater than one, with N_i a positive integer, with i an index to each load of the L loads. Henry et al. teach (see Fig. 2) a radiation detector comprising a phototransistor array with N (# of columns) groups (a column of elements) of elements such that the detector has L (= # of rows) loads (20_j) (see Col. 1, lines 46-52), with a signal contact (top contact of (20j)) of each i-th load connected to N_i (= # of columns) group of

elements, and the total number of groups of elements contained in said detector equals the number of N outputs of the interrogation pulse generator (generating X_1 to X_n- see Col. 2, lines 29-31) , where L is an integer greater than one, N_i is a positive integer (see Fig. 2), and i is an index to each load of the L loads. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use multiple loads as taught by Henry et al. in the detector of Imaide et al., to provide multiple simultaneous readouts for each row or column in order to more quickly output a full two-dimensional detection image.

10. Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imaide et al. (in view of Herbst et al. and Harry et al. as appropriate), further in view of Dudley et al. US Patent No. 5,144,133.

Regarding Claim 8, Imaide et al. in view of Herbst et al. (and Harry et al. when dependent on Claim 7) teach the detector in Claims 5-7, according to the appropriate paragraph above. Regarding Claim 11, Imaide et al. (in view of Herbst et al. when dependent on Claim 10) teach the detector in Claims 5-7, according to the appropriate paragraph above. Herbst et al. also teach (see Fig. 1) a common point (E) of each transistor and capacitor for each radiation sensitive element in each group of elements as after the radiation sensitive element and before the transistor (see Fig. 1). Imaide et al. do not teach a resistor connected between each radiation sensitive element and a common point of each transistor and capacitor in each group of elements, respectively. Dudley et al. teach (see Fig. 1 and 2) a similar detector, with groups (see Fig. 1) of radiation-sensitive elements (11) and a resistor (19) connected after the radiation sensitive element and before a transistor (connected to MUX). It would have been obvious to one of

ordinary skill in the art at the time the invention was made to provide a resistor connected between each radiation sensitive element and a common point of each transistor and capacitor in each group of elements (for Claim 8), or between the first electrode of the transistor and the radiation-sensitive element (for Claim 11), respectively, by combining the teachings of Weimer with the detector of Imaide et al. (in view of Herbst et al. and/or Harry et al. when appropriate), to provide elements for a low-pass filter to reduce high-frequency noise, as taught by Dudley et al. (see Col. 2, lines 49-56).

Response to Arguments

11. Applicant's arguments filed October 27, 2003 have been fully considered but they are not persuasive.

Regarding Applicant's arguments on the Imaide reference, Applicant argues that Imaide teaches the photodiode connected directly the common bus, then to transistor, then to load, while Applicant's invention teaches the photodiode not connected to the bus but connected to the load from the signal side of the transistor. Examiner asserts that this particular sequence is not reflected by the claim language, and that the claim language is still anticipated by the Imaide device, since the claim language merely recites the load connected to the photodiode and to a common bus and with the photodiode coupled to the transistor, with the transistor coupled to the common bus. The embodiment in Fig. 1A of the Imaide reference still meets these claim limitations. Applicant also argues that Applicant's invention has linearity of charge/discharge,

wide-range linearity, and usage in radiographic systems. Examiner asserts that the claim language does not recite these features.

Regarding Applicant's arguments on the Henry reference, Applicant argues that Henry teaches phototransistors and not photodiodes, and do not observe storage of a signal or measure of a charge. Examiner asserts that while the specifics of the radiation-sensitive element (phototransistor vs. photodiode) are different, the method of signal output is similar. Furthermore, a storage of a signal or measuring of a charge is not listed in the claim language.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (703)306-3441. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703)308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703)308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

SY

SY

TIMOTHY C. LIU
EXAMINER